

PATENT APPLICATION
Attorney Docket No. **R/98003C**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Marc Dymetman et al.)	
)	Art Unit: To Be Assigned
Appl. No.: To Be Assigned)	
)	Examiner: To Be Assigned
Filed: To Be Assigned)	

Title: **MARKING MEDIUM AREA WITH ENCODED IDENTIFIER FOR
PRODUCING ACTION THROUGH NETWORK**

Assistant Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

The following preliminary amendment and remarks are respectfully submitted in connection with the above-identified application.

Please amend the above-identified application as follows:

In the Specification:

Appendix A submitted herewith sets forth a marked up version of a prior pending paragraphs(s) with additions shown with underlining (e.g., new text) and deletions shown with a strikethrough (e.g., ~~delete text~~) under 37 C.F.R. 1.121(b)(1)(iii), unless such paragraph has been added or deleted.

Please DELETE, REPLACE, and/or ADD the following paragraph(s) of the specification under 37 C.F.R. 1.121(b)(1):

1. Please **REPLACE** the pending paragraph of the specification that starts at **page 1, line 3** with the following paragraph:

This application is a continuation of Application Serial No. 09/276,085 filed March 25, 1999. Application Serial No. 09/276,085 claims priority under 35 U.S.C. §120 from now abandoned International Application PCT/US98/20597, filed 30 September 1998, with respect to all shared subject matter.

2. Please **REPLACE** the pending paragraph of the specification that starts at **page 3, line 11** with the following paragraph:

The techniques described by Södergård et al. and Robinson et al. may lead to advances, but were developed with other objectives in mind and are not well-suited to efficiently obtaining an automatic action appropriate to a specific physical object. The Södergård technique relies on OCR of any of a number of anchor words that appear in a book, and each anchor word is linked to a URL through a link list; but an anchor word appears to produce the same URL independent of the book in which it appears. The Robinson technique requires a complex sequence in which a Web page is retrieved, then printed, then pointed to on the DigitalDesk. In general, these and other conventional techniques do not provide automatic actions appropriate to physical objects through a network in a non-disruptive streamlined manner.

3. Please **REPLACE** the pending paragraph of the specification that starts at **page 10, line 15** with the following paragraph:

When the type is "digital-page", router 802 provides the network address of digital page 6, which can be a digital page counterpart of document 2 that is stored on a server connected to the network. Pointer 502 or associated circuitry can (1) save the network address of digital page 6 in a digital-page-address store, and (2) send location code loc, serving as an action identifier, and the network address of display 4 from the peripheral-address store to the digital page's network address.

4. Please **REPLACE** the pending paragraph of the specification that starts at **page**

11, line 18 with the following paragraph:

Various routing techniques that may be employed are described in greater detail in copending, coassigned U.S. Patent Application 09/276,084, entitled "Using Identifiers to Obtain Network Addresses, incorporated herein by reference.

5. Please **DELETE** the pending paragraph of the specification that starts at **page 12, line 6 and continues to line 12.**

6. Please **REPLACE** the pending paragraph of the specification that starts at **page 12, line 13** with the following paragraph:

Each 0.5 cm by 0.5 cm square zone or cell of machine-readable markings can hold, for example, 256 bits of reliable information. Of these, 128 bits can hold the page-identifier (which is thus redundantly repeated on each cell of a page), and 16 bits can hold the cell localization (or cell address or location code) on the page. 16 bit location codes correspond to a maximum number of 65536 cells on a page, which in turn corresponds to a 123cm x 123cm maximum size page. 112 bits are left for other information, such as a page-id-code that can be used for authentication or data private to the publisher.

7. Please **REPLACE** the pending paragraph of the specification that starts at **page 13, line 34** with the following paragraph:

an encoded representation of a page-identifier, i.e. an item of data whose value uniquely identifies the page, within cell border 204, such as a first set of markings 208; and

8. Please **REPLACE** the pending paragraph of the specification that starts at **page 14, line 9** with the following paragraph:

Figure 4 illustrates components of a document printed on a coded substrate. Printed document 102 comprises layer 104 of printed visible (human-readable) information, i.e. document content, printed on coded substrate 106, illustratively a

segment of a map though layer 104 could include text, photographic images, or any other human-readable information. The coded substrate 106 in turn comprises a layer 108 of visible or invisible machine-readable markings printed on a sheet medium 110 (e.g. paper).

9. Please **REPLACE** the pending paragraph of the specification that starts at **page 15, line 35** with the following paragraph:

The encoded location identifiers in a non-positional implementation could, for example, be DataGlyph address space fragments of the type described in copending, coassigned U.S. Patent No. 5,937,110, entitled "Parallel Propagating Embedded Binary Sequences for Characterizing Objects in N-Dimensional Address Space", incorporated herein by reference. Other markings could be used, such as bar codes, icons, circled numbers in an OCR font, and so forth. The robustness of the non-positional implementation increases with the ease of recognition of the markings, while the document looks better as the intrusiveness of the marks decreases, and particularly as the marks remain recognizable when partially occluded, metrics on which DataGlyphs perform well.

10. Please **REPLACE** the pending paragraph of the specification that starts at **page 16, line 16** with the following paragraph:

As mentioned above, a detection device or detection circuitry can provide input signals that include information defining the machine-readable markings, and processing circuitry can use the input signals to obtain an action/medium identifier. The detection device or circuitry and the processing circuitry could take any appropriate form. Some examples are illustrated in Figs. 8-11. Other examples of detection devices that could be used are described in copending, coassigned U.S. Patent Application Nos. 09/144,250, entitled "Methods and Apparatus for Camera Pen"; 09/144,251, entitled "Glyph Address Carpet Methods and Apparatus for Providing Location Information in a Multidimensional Address Space"; and 09/223,882, entitled "Multi-level Selection Methods and Apparatus Using Context Identification for Embedded Data Graphical User Interfaces", all incorporated herein by reference.

11. Please **REPLACE** the pending paragraph of the specification that starts at **page 18, line 32** with the following paragraph:

Figure 11 schematically illustrates features of a pointer that may be used in implementing the invention. Pointer 502 comprises pointing device 504, which may have tip 505, and image capture device 506, which can be a camera or another type of image input circuitry. In use, image capture device 506 is able to capture images of an area A of a document 508, which can be implemented with a coded substrate as illustrated in Figs. 3-7. For the sake of illustration, the sizes of the components of pointer 502 are exaggerated, and pointing device 504 is shown parallel to image capture device 506 although they could be differently oriented -- e.g. in practice, area A may be much closer to tip 505 of pointing device 504 than appears in Fig. 11, so that a user may easily determine from tip 505 where area A is located. In certain embodiments, pointing device 504 may be omitted. In others, pointing device 504 may also be a pen or any other marking device suitable for making marks on a coded substrate that are visible to a user. If pointing device 504 is a marking device, it functions as a combination writer-pointer. Image capture device 506 can monitor the position of tip 505 in real time, and marks can be recorded in digital form concurrently with their physical production. This allows capture of handwritten notes. If pointer movements are time stamped, the dynamicity of the strokes can be recovered to preserve the time and order of each annotation and its relations to other events, such as events in a video recording; related techniques are described in copending, coassigned U.S. Patent Application No. 09/276,532, entitled "Obtaining and Using Data Associating Annotating Activities With Portions of Recordings", incorporated herein by reference. The dynamicity of the strokes can also be used in signature authentication and handwriting recognition. Editor's marks handwritten on a draft typescript can be interpreted in real time to produce a corrected version. If the pointer is wireless, notes can be available online, allowing applications such as the transmission of handwritten faxes without a fax machine nearby.

12. Please **REPLACE** the pending paragraph of the specification that starts at **page 20, line 17** with the following paragraph:

In the seventh box, the processing circuitry branches based on the type received from the router or retrieved from cache. If the type is peripheral, the processing circuitry follows the right branch in Fig. 12, and sets its peripheral address to the network address received from the router or retrieved from cache. If the type is digital page, the processing circuitry follows the left branch, first setting its digital page address to the network address and then sending the peripheral address and loc to the digital page address.

13. Please **REPLACE** the pending paragraph of the specification that starts at **page 32, line 35** with the following paragraph:

Related techniques are described in copending, coassigned U.S. Patent Application No. 09/223,882, entitled "Multi-level Selection Methods and Apparatus Using Context Identification for Embedded Data Graphical User Interfaces", incorporated herein by reference.

14. Please **REPLACE** the pending paragraph of the specification that starts at **page 38, line 30** with the following paragraph:

It will be appreciated that the techniques described herein may also be used in conjunction with the related techniques described in copending, coassigned U.S. Patent Application Nos. 09/276,532, entitled "Obtaining and Using Data Associating Annotating Activities With Portions of Recordings", and 09/276,084, entitled "Obtaining Network Addresses from Identifiers", both incorporated herein by reference.

In the Claims:

Appendix B submitted herewith sets forth a marked up version of the prior pending claim(s) which have been amended by this Amendment with additions shown with underlining (e.g., new text) and deletions shown with a strikethrough (e.g., ~~delete text~~) under 37 C.F.R. 1.121(c)(1)(ii).

Please **cancel** claims 1-29.

Please **add** the following new Claims 30-49:

30. **(New)** A method for producing an action through a network, comprising:
 - storing in a pointing device a first identifier that identifies a user of the pointing device;
 - recording with the pointing device machine readable markings at a location on a hardcopy document;
 - decoding the machine readable markings to obtain a second identifier that identifies the hardcopy document and the location on the hardcopy document;
 - using the first identifier and the second identifier to produce the action through the network;
 - wherein the action produced through the network is tailored to:
 - (a) the location on the hardcopy document identified by the second identifier,
 - and
 - (b) the user of the pointing device identified by the first identifier.

31. **(New)** A method according to claim 30, wherein a portion of an item is illustrated at the location on the hardcopy document.

32. **(New)** A method according to claim 31, wherein the action produced through the network initiates delivery of the item to the user.

33. **(New)** A method according to claim 32, wherein the item is an article.

34. **(New)** A method according to claim 30, wherein the second identifier

further specifies an action device using a globally unique identifier that identifies the hardcopy document.

35. **(New)** A method according to claim 34, further comprising providing the second identifier through the network to the action device for producing the action.

36. **(New)** A method according to claim 35, wherein the action device provides the action automatically in response to receiving a location identifier identifying the location on the hardcopy document identified by the second identifier.

37. **(New)** A method according to claim 30, wherein the second identifier includes a page identifier.

38. **(New)** A method according to claim 37, wherein the machine-readable markings are visually nonobstructive markings.

39. **(New)** A pointing device, comprising:

a memory for storing a first identifier that identifies the user of the pointing device;

a camera for recording machine readable markings at a location on a hardcopy document;

a processor for decoding the machine readable markings to obtain a second identifier that identifies the hardcopy document and the location on the hardcopy document;

network connection hardware for using the first identifier and the second identifier to produce the action through the network;

wherein the action produced through the network is tailored to:

(a) the location on the hardcopy document identified by the second identifier, and

(b) the user of the pointing device identified by the first identifier.

40. **(New)** A pointing device according to claim 39, wherein the pointing device is handheld.

41. **(New)** A pointing device according to claim 39, wherein the machine-readable markings are visually nonobstructive markings.

42. **(New)** A pointing device according to claim 39, wherein the second identifier includes an access control code.

43. **(New)** A pointing device according to claim 39, wherein the location of the hardcopy document is on a page of the hardcopy document.

44. **(New)** A pointing device according to claim 39, wherein the second identifier includes a page identifier.

45. **(New)** A pointing device according to claim 39, further comprising detection circuitry for receiving input signals from the user.

46. **(New)** A method for operating a pointing device to perform an action through a network, comprising:

recording input signals of machine-readable markings from an area of a marking medium using a camera integral with the pointing device;

decoding on a processor integral with the pointing device using the recorded input signals of the machine-readable markings to obtain an identifier; the identifier identifying the marking medium and a location of the area of the marking medium; and

forwarding the identifier using network connection hardware integral with the pointing device to an action device coupled to the network to perform the action specifically for a user identified by the pointing device.

47. **(New)** A method according to claim 46, wherein the identifier is an action/medium identifier.

48. **(New)** A method according to claim 46, wherein the pointing device is handheld.

49. **(New)** A method according to claim 46, wherein the actions are automatically performed by the action device in response to receiving the identifier.

REMARKS

This application is a continuation of parent application serial number 09/276,085 which was allowed on June 22, 2001 and which Applicants intend to advance to issuance.

This preliminary amendment cancels claims 1-29, and adds new claims 30-49. Of claims 30-49 now pending, claims 30, 39 and 46 are independent claims. These amendments are directed at subject matter in Figures 2 and 8 and accompanying disclosure in the specification, which includes but is not limited to: page 3, lines 19-28; page 19, lines 18-35; and page 21, lines 24-29. No new matter is therefore believed to be introduced by these amendments.

In addition, this preliminary amendment amends the first paragraph of the specification to indicate that the instant application is a continuation of parent application serial number 09/276,085. Also, this preliminary amendment amends the specification to incorporate like amendments made to the specification of the parent application serial number 09/276,085 and newly identified typographical errors. No new matter is therefore believed to have been introduced by these amendments.

The Examiner is respectfully requested to enter these preliminary amendments prior to initial examination.

In the event the Examiner considers a personal contact advantageous to the disposition of this case, the Examiner is hereby requested to call Attorney for Applicant(s), Thomas Zell.

Respectfully submitted,



Thomas Zell
Attorney for Applicant(s)
Registration No. 37,481
Telephone: 650-812-4282

Grenoble, France
Date: October 5, 2001

APPENDIX A

Marked Up Amended Paragraphs Of Specification Under 37 C.F.R.**1.121(b)(1)(iii):**

Appendix A sets forth a marked up version of the prior pending paragraphs(s) in the specification other than the claims with additions shown with underlining (e.g., new text) and deletions shown with a strikethrough (e.g., ~~delete text~~).

1. The pending paragraph of the specification that starts at **page 1, line 3** has been amended as follows:

This application is a continuation of Application Serial No. 09/276,085 filed March 25, 1999. Application Serial No. 09/276,085 claims priority under 35 U.S.C. §120 from ~~depending now abandoned~~ International Application PCT/US98/20597, filed 30 September 1998, with respect to all shared subject matter.

2. The pending paragraph of the specification that starts at **page 3, line 11** has been amended as follows:

The techniques described by Södergård et al. and Robinson et al. may lead to advances, but were developed with other objectives in mind and are not well-suited to efficiently obtaining an automatic action appropriate to a specific physical object. The Södergård technique relies on OCR of any of a number of anchor words that appear in a book, and each anchor word is linked to a URL through a link list; but an anchor word appears to produce the same URL independent of the book in which it appears~~URLs, but OCR is not reliable and a URL can appear in a hardcopy document even though the URL does not produce an action related the document.~~ The Robinson technique requires a complex sequence in which a Web page is retrieved, then printed, then pointed to on the DigitalDesk. In general, these and other conventional techniques do not provide automatic actions appropriate to physical objects through a network in a non-disruptive streamlined manner.

3. The pending paragraph of the specification that starts at **page 10, line 15** has

been amended as follows:

When the type is "digital-page", router 802 provides the network address of digital page 6, which can be a Web-digital page counterpart of document 2 that is stored on a server connected to the network. Pointer 502 or associated circuitry can (1) save the network address of digital page 6 in a digital-page-address store, and (2) send location code loc, serving as an action identifier, and the network address of display 4 from the peripheral-address store to the digital page's network address.

4. The pending paragraph of the specification that starts at **page 11, line 18** has been amended as follows:

Various routing techniques that may be employed are described in greater detail in copending, coassigned U.S. Patent Application 09/276,084~~CCC,CCG~~ (Atty. Docket No. ~~R/98005~~), entitled "Using Identifiers to Obtain Network Addresses, incorporated herein by reference.

5. The pending paragraph of the specification that starts at **page 12, line 6** has been amended as follows:

~~Under address protocols currently being devised for the Internet, 128 bits theoretically permits addressing of 3.4×10^{38} items, or 6.7×10^{23} items per square meter of the surface of the Earth. In practice the assignment and routing of addresses requires the creation of hierarchies that reduce the efficiency of the usage of the address space. Therefore, these figures should be lowered somewhat, with a pessimistic estimate being 8×10^{17} nodes (1564 addresses per square meter of the Earth), and an optimistic one being 2×10^{33} nodes (4×10^{18} addresses per square meter of the Earth).~~

6. The pending paragraph of the specification that starts at **page 12, line 13** has been amended as follows:

Each 0.5 cm by 0.5 cm square~~cm~~² zone or cell of machine-readable markings can hold, for example, 256 bits of reliable information. Of these, 128 bits can hold the page-identifier (which is thus redundantly repeated on each cell of a page), and 32-16 bits can hold the cell localization (or cell address or location code) on the

page. ~~32~~16 bit location codes correspond to a maximum number of 65536 cells on a page, which in turn corresponds to a 123cm x 123cm maximum size page. ~~224~~112 bits are left for other information, such as a page-id-code that can be used for authentication or data private to the publisher.

7. The pending paragraph of the specification that starts at **page 13, line 34** has been amended as follows:

an encoded representation of a page-identifier, i.e. an item of data whose value uniquely ~~identifies~~identifies the page, within cell border 204, such as a first set of markings 208; and

8. The pending paragraph of the specification that starts at **page 14, line 9** has been amended as follows:

Figure 4 illustrates components of a document printed on a coded substrate. Printed document 102 comprises layer 104 of printed visible (human-readable) information, i.e. document content, printed on coded substrate 106, illustratively a segment of a map though layer 104 could include text, photographic images, or any other human-readable information. The coded substrate 106 in turn comprises a layer 108 of visible or invisible machine-readable ~~markings~~printed markings printed on a sheet medium 110 (e.g. paper).

9. The pending paragraph of the specification that starts at **page 15, line 35** has been amended as follows:

The encoded location identifiers in a non-positional implementation could, for example, be DataGlyph address space fragments of the type described in copending, coassigned U.S. Patent ~~Application~~-No. 5,937,110~~08/772,158~~, entitled "Parallel Propagating Embedded Binary Sequences for Characterizing Objects in N-Dimensional Address Space", incorporated herein by reference. Other markings could be used, such as bar codes, icons, circled numbers in an OCR font, and so forth. The robustness of the non-positional implementation increases with the ease of recognition of the markings, while the document looks better as the intrusiveness

of the marks decreases, and particularly as the marks remain recognizable when partially occluded, metrics on which DataGlyphs perform well.

10. The pending paragraph of the specification that starts at **page 16, line 16** has been amended as follows:

As mentioned above, a detection device or detection circuitry can provide input signals that include information defining the machine-readable markings, and processing circuitry can use the input signals to obtain an action/medium identifier. The detection device or circuitry and the processing circuitry could take any appropriate form. Some examples are illustrated in Figs. 8-11. Other examples of detection devices that could be used are described in copending, coassigned U.S. Patent Application Nos. 09/144,250, entitled "Methods and Apparatus for Camera Pen"; 09/144,251, entitled "Glyph Address Carpet Methods and Apparatus for Providing Location Information in a Multidimensional Address Space"; and 09/233223,882, entitled "Multi-level Selection Methods and Apparatus Using Context Identification for Embedded Data Graphical User Interfaces", all incorporated herein by reference.

11. The pending paragraph of the specification that starts at **page 18, line 32** has been amended as follows:

Figure 11 schematically illustrates features of a pointer that may be used in implementing the invention. Pointer 502 comprises pointing device 504, which may have tip 505, and image capture device 506, which can be a camera or another type of image input circuitry. In use, image capture device 506 is able to capture images of an area A of a document 508, which can be implemented with a coded substrate as illustrated in Figs. 3-7. For the sake of illustration, the sizes of the components of pointer 502 are exaggerated, and pointing device 504 is shown parallel to image capture device 506 although they could be differently oriented -- e.g. in practice, area A may be much closer to tip 505 of pointing device 504 than appears in Fig. 11, so that a user may easily determine from tip 505 where area A is located. In certain embodiments, pointing device 504 may be omitted. In others, pointing device 504 may also be a pen or any other marking device suitable for making marks on a

coded substrate that are visible to a user. If pointing device 504 is a marking device, it functions as a combination writer-pointer. Image capture device 506 can monitor the position of tip 505 in real time, and marks can be recorded in digital form concurrently with their physical production. This allows capture of handwritten notes. If pointer movements are time stamped, the dynamicity of the strokes can be recovered to preserve the time and order of each annotation and its relations to other events, such as events in a video recording; related techniques are described in copending, coassigned U.S. Patent Application No. 09/276,532~~BBB, BBB~~ (Atty. Docket No. ~~R/98004~~), entitled "Obtaining and Using Data Associating Annotating Activities With Portions of Recordings", incorporated herein by reference. The dynamicity of the strokes can also be used in signature authentication and handwriting recognition. Editor's marks handwritten on a draft typescript can be interpreted in real time to produce a corrected version. If the pointer is wireless, notes can be available online, allowing applications such as the transmission of handwritten faxes without a fax machine nearby.

12. The pending paragraph of the specification that starts at **page 20, line 17** has been amended as follows:

In the seventh box, the processing circuitry branches based on the type received from the router or retrieved from cache. If the type is peripheral, the processing circuitry follows the right branch in Fig. 12, and sets its peripheral address to the network address received from the router or retrieved from cache. If the type is digital page, the processing circuitry follows the ~~right-left~~ branch, first setting its digital page address to the network address and then sending the peripheral address and loc to the digital page address.

13. The pending paragraph of the specification that starts at **page 32, line 35** has been amended as follows:

Related techniques are described in copending, coassigned U.S. Patent Application No. 09/233223,882, entitled "Multi-level Selection Methods and Apparatus Using Context Identification for Embedded Data Graphical User Interfaces", incorporated herein by reference.

14. The pending paragraph of the specification that starts at **page 38, line 30** has been amended as follows:

It will be appreciated that the techniques described herein may also be used in conjunction with the related techniques described in copending, coassigned U.S. Patent Application Nos. 09/276,532~~BBB, BBB~~ (Atty. Docket No. ~~R/98004~~), entitled "Obtaining and Using Data Associating Annotating Activities With Portions of Recordings", and 09/276,084~~CCC, CCC~~ (Atty. Docket No. ~~R/98005~~), entitled "Obtaining Network Addresses from Identifiers", both incorporated herein by reference.

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APPENDIX B

Marked Up Amended Claims Under 37 C.F.R. 1.121(c)(1)(ii):

Appendix B sets forth a marked up version of the prior pending claim(s) with additions shown with underlining (e.g., new text) and deletions shown with a strikethrough (e.g., ~~delete text~~).

Claims 1-29 have been **canceled**.

Claims 30-49 are **new**.

equipped with a processor and a memory, the processor being configured to execute instructions stored in the memory, the instructions being configured to cause the processor to perform the steps of the method of claim 1.